

Geometry Date_____ 4.1 Assignment
Triangles and Angles (pp 194-197)

1. What is your name?

Classify the triangle by its angles and by its sides.

2.



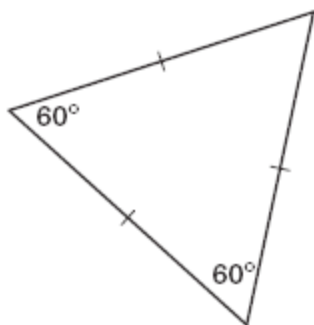
Right,
Scalene

3.



obtuse
isosceles

4.



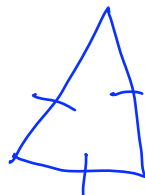
Acute
Equilateral / Equiangular.

Sketch the following triangles, if possible. If not possible, state so.

5. A right isosceles triangle.



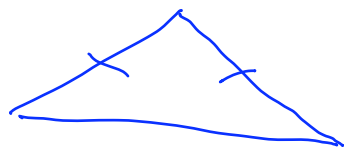
6. An acute equilateral triangle.



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7. An obtuse scalene triangle.

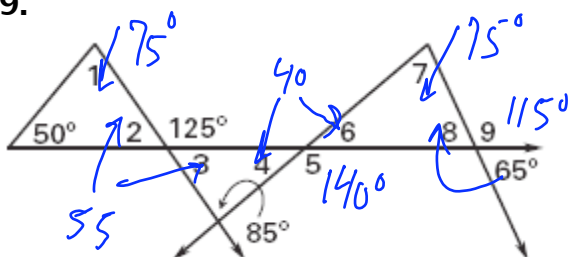


8. A right obtuse triangle.

Not possible.

Find the measure of the numbered angle.

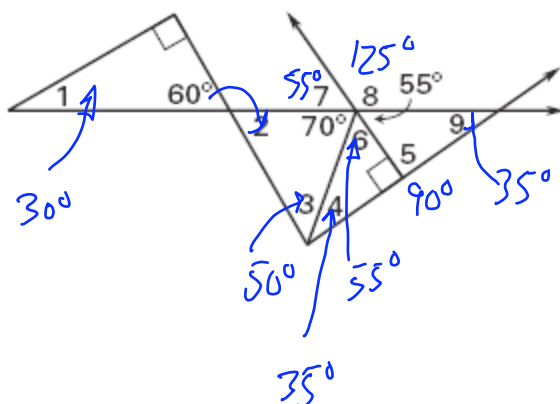
9.



$$\begin{aligned} m\angle 1 &= 75^\circ \\ m\angle 2 &= 55^\circ \\ m\angle 3 &= 55^\circ \\ m\angle 4 &= 40^\circ \\ m\angle 5 &= 140^\circ \\ m\angle 6 &= 40^\circ \\ m\angle 7 &= 75^\circ \end{aligned}$$

$$\begin{aligned} m\angle 8 &= 65^\circ \\ m\angle 9 &= 115^\circ \end{aligned}$$

10.



$$\begin{aligned} m\angle 1 &= 30^\circ \\ m\angle 2 &= 60^\circ \\ m\angle 3 &= 50^\circ \\ m\angle 4 &= 35^\circ \\ m\angle 5 &= 90^\circ \\ m\angle 6 &= 55^\circ \\ m\angle 7 &= 55^\circ \\ m\angle 8 &= 125^\circ \\ m\angle 9 &= 35^\circ \end{aligned}$$

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The variable expressions represent the angle measures of a triangle. Find the measure of each angle. Then classify the triangle by its angles.

11. $m\angle A = x^\circ$ 30°
 $m\angle B = 2x^\circ$ 60° Right
 $m\angle C = 3x^\circ$ 90°

12. $m\angle A = (3x - 17)^\circ$ 64°
 $m\angle B = (x + 40)^\circ$ 67° Acute
 $m\angle C = (2x - 5)^\circ$ 49°

$$6x + 17 = 180$$

$$6x = 162$$

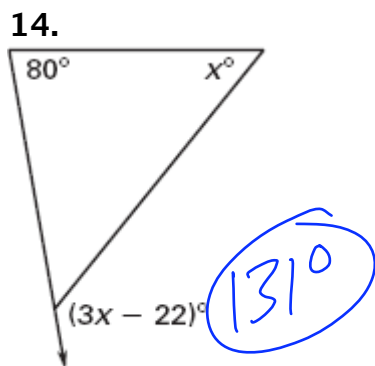
$$x = 27$$

13. $m\angle A = 2x^\circ$ 100
 $m\angle B = x^\circ$ 50 Obtuse
 $m\angle C = (x - 20)^\circ$ 30

$$4x - 20 = 180$$

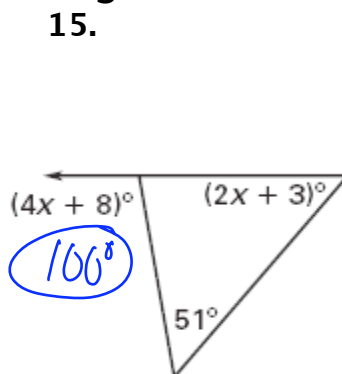
$$x = 50$$

Find the measure of the exterior angle shown.



$$80 + x = 3x - 22$$

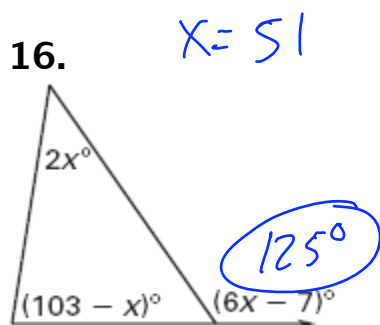
$$102 = 2x$$



$$4x + 8 = 2x + 54$$

$$2x = 46$$

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$$x + 103 = 6x - 7$$

$$110 = 5x$$

$$x = 22$$

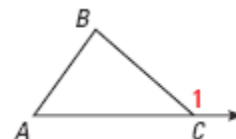
17. In $\triangle ABC$, $m\angle A = 42^\circ$. $m\angle B$ is 8 less than twice $m\angle A$. What the measure of the exterior angle at vertex C?

$$42 + 76 = 118^\circ$$

18. Fill in the missing steps in the two-column proof of the Exterior Angle Theorem.

Given: $\angle 1$ is an exterior angle of $\triangle ABC$.

Prove: $m\angle 1 = m\angle A + m\angle B$



Statement	Reason
$\angle 1$ is an exterior angle of $\triangle ABC$.	
$\angle ACB$ & $\angle 1$ are a linear pair.	Definition of exterior angle.
$m\angle ACB + m\angle 1 = 180^\circ$	
	Triangle Sum Theorem.
$m\angle ACB + m\angle 1 = m\angle A + m\angle B + m\angle ACB$	
$m\angle 1 = m\angle A + m\angle B$	

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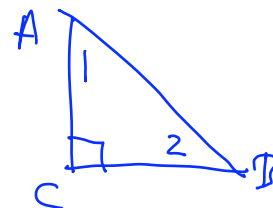
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19. Write a two column proof of “The acute angles of a right triangle are complementary.”

Given: $\triangle ABC$ is a rt \triangle

Prove: $\angle 1$ & $\angle 2$ are complementary

Statement	Reason
1. $\triangle ABC$ is a rt \triangle $m\angle C = 90^\circ$	1. Given
2. $m\angle 1 + m\angle 2 + m\angle C = 180^\circ$	2. Triangle sum thm
3. $m\angle 1 + m\angle 2 + 90^\circ = 180^\circ$	3. Substitution =



Statement	Reason
4. $m\angle 1 + m\angle 2 = 90^\circ$	4. — =
5. $\angle 1$ & $\angle 2$ are complementary	5. Defn. of complementary

Multiple Choice.

20. B The lengths of the two legs of an isosceles triangles are represented by the expressions $(2x - 5)$ and $(x + 7)$. The perimeter of the triangle is 50 cm. Find the length of the base of the triangle.

- A. 11 cm
- B. 12 cm
- C. 19 cm
- D. 26 cm
- E. 32 cm

21. D Which terms can be used to describe a triangle with two 45° interior angles?

- A. Acute
- B. Equilateral
- C. Obtuse
- D. Right
- E. Scalene

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Review.

Use the figure to determine whether the statement is true or false.

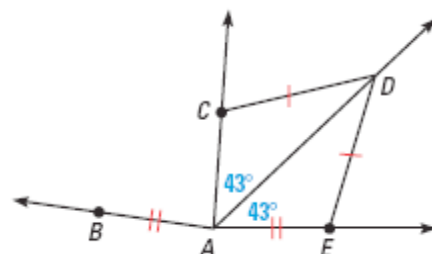
(Chapter 1 Section 5)

22. T $\angle CAD \cong \angle EAD$

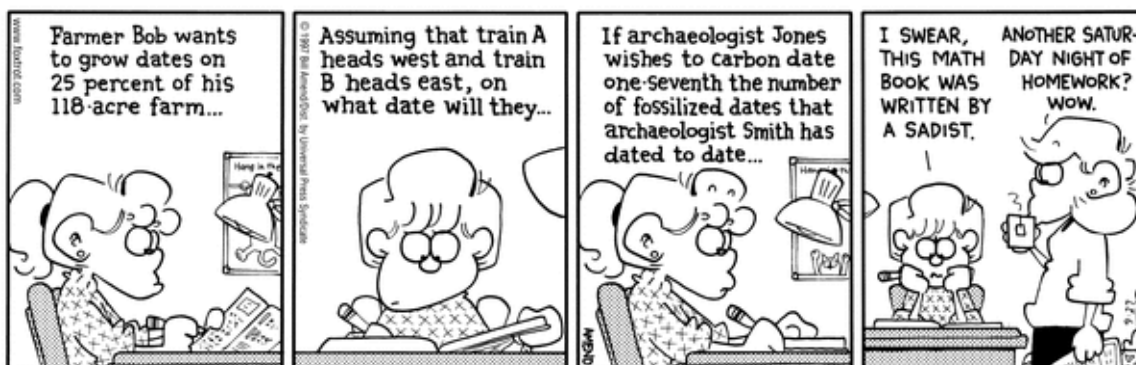
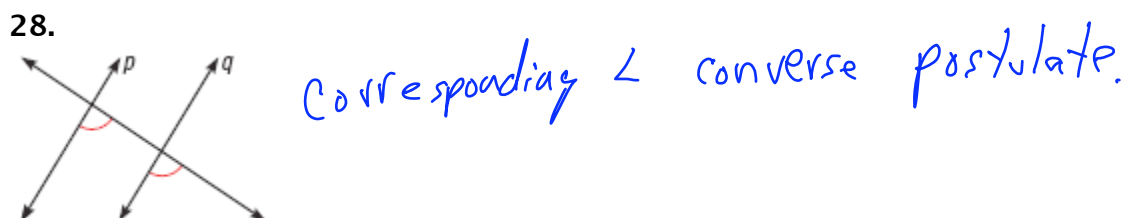
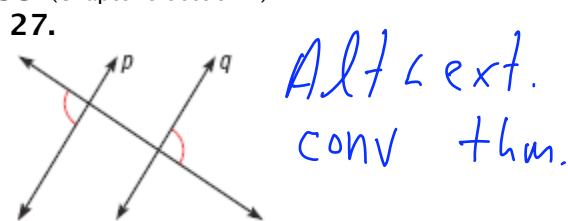
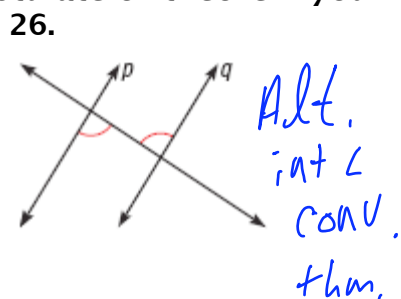
23. F $m\angle CAD + m\angle EAB = 86^\circ$

24. F $\overline{CD} \cong \overline{AC}$

25. T \overline{AD} bisects $\angle CAE$.



Is it possible to prove that lines p and q are parallel? If so, state the postulate or theorem you would use. (Chapter 3 Section 4)



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Write an equation of the line that passes through the given point P and has the given slope. (Chapter 3 Section 6)

29. $P(8,3), m = -\frac{3}{2}$

$$y = -\frac{3}{2}x + 15$$

30. $P(-3, -5), m = -1$

$$y = -x - 8$$

31. $P(-2, -3), m = -\frac{7}{2}$

$$y = -\frac{7}{2}x - 10$$

32. $P(-6, -4), m = -\frac{1}{3}$

$$y = -\frac{1}{3}x - 6$$



With three hours in costume still ahead of them, Mike was becoming increasingly dismayed as Ed wolfed down his third bowl of beans and cabbage.